REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 5, 7-13, 15-21, and 23 are pending in the present application, Claim 1 having been amended, and Claims 2-4 having been canceled without prejudice or disclaimer. Support for the amendment to Claim 1 is found, for example, in original Claims 3 and 4. Applicants respectfully submit that no new matter is added. Applicants respectfully submit that no new issues are raised by the present amendment, and respectfully request that the present amendment be entered.

In the outstanding Office Action, Claims1, 3, 5, 7-9, 15-17, and 23 were rejected under 35 U.S.C. §102(b) as anticipated by Surampudi et al. (U.S. Patent No. 6,303,244, hereinafter Surampudi); Claims 11-13 and 19-21 were rejected under 35 U.S.C. §103(a) as unpatentable over Surampudi in view of Von Andrian (U.S. Patent No. 6,977,118); and Claims 10 and 18 were rejected under 35 U.S.C. §103(a) as unpatentable over Surampudi in view of Tskuki et al. (U.S. Patent No. 4,629,664, hereinafter Tskuki). Claims 2 and 4 were not addressed on the merits.

With respect to the rejection of Claim 1 as anticipated by Tskuki, Applicants respectfully traverse this ground of rejection. Amended Claim 1 recites, *inter alia*, "a heat exchanger exchanging heat between the liquid fuel supplied by the fuel supply unit to the anode and an exhaust exhausted from the liquid fuel cell, wherein the exhaust is exhausted from the anode or both the cathode and the anode." Surampudi does not disclose or suggest this element of amended Claim 1.

A heat exchanger acts on at least two working fluids, as previously noted in the response filed on August 18, 2006. The above-noted language of Claim 1 provides a clear recitation that two of the working fluids are the "liquid fuel supplied by the fuel supply unit

to the anode" and "an exhaust exhausted from the liquid fuel cell." Furthermore, the present amendment to Claim 1 further describes that the exhaust used in the heat exchanger is the exhaust from the anode or both the cathode and the anode.

Surampudi discloses that heat exchanger 37 receives the output from anode outlet port 23 of the stack 25.[1] Specifically, it is noted that Fig. 2 of Surampudi shows an arrow directed to the heat exchanger 37 from outlet port 23. However, Surampudi fails to disclose or suggest what substances the heat exchanger 37 exchanges heat between.

Furthermore, assuming *arguendo* that the output from the anode were one of the fluids subject to the heat exchange at the heat exchanger 37 and was further assumed to be equivalent to the claimed "exhaust exhausted from the liquid fuel cell," another fluid would be left unknown.

Col. 3, lines 47-49 of Surampudi touches on a flow of the fuel in the system. However, no relation to the heat exchanger 37 is found in Surampudi.

More specifically, any disclosure or suggestion that the liquid fuel supplied by the fuel supply unit to the anode is used as another working fluid of the heat exchanger 37 is not found in Surampudi.

Von Andrian does not cure the above-noted deficiencies in Surampudi. The outstanding Office Action takes the position that Von Andrian discloses a heat exchanger exchanging heat between the liquid fuel supplied by the fuel supply unit to the anode and an exhaust exhausted from the liquid fuel cell.[2] Applicants respectfully traverse this position.

An exhaust from an anode of the system shown in Von Andrian is not used as a working fluid for any of the heat exchangers WT1, WT2, and WT3. This is apparent from Fig. 1 of Von Andrian, in which the exhaust from the anode is not related to any of the heat exchangers WT1, WT2, and WT3. Therefore, Von Andrian does not disclose or suggest, at

[1] Surampudi, col. 3, lines 33-35 and Fig. 2.
[2] Office Action, page 5.

least the claimed "a heat exchanger exchanging heat between the liquid fuel supplied by the fuel supply unit to the anode and an exhaust exhausted from the liquid fuel cell, wherein the exhaust is exhausted from the anode or both the cathode and the anode."

Furthermore, Tskuki does not cure the above-noted deficiencies in Surampudi and Von Andrian. Tskuki does not disclose or suggest the claimed "a heat exchanger exchanging heat between the liquid fuel supplied by the fuel supply unit to the anode and an exhaust exhausted from the liquid fuel cell, wherein the exhaust is exhausted from the anode or both the cathode and the anode."

Furthermore, Applicants respectfully submit that invention defined by Claim 1 is not obvious. There is no motivation to modify any of the cited references to arrive at the claimed invention. For example, any motivation to modify the heat exchanger of Surampudi to have the liquid fuel used as one of the working fluids is not found. Further, Von Andrian's disclosure focuses on optimization of the operating parameters of a direct methanol fuel cell system. These disclosures, per se, teach away from any modification of flows of the anode exhaust and the cathode exhaust because such modification would considerably change the operating parameters. Moreover, any proposed modification that would change the basic operating principle of a reference is not an obvious one. See In re Ratti, 123 USPQ 349, 352 (CCPA 1959).

In view of the above-noted distinctions, Applicants respectfully submit that amended Claim 1 (and any claims dependent thereon) patentably distinguishes over Surampudi, Von Andrian, and Tskuki, taken alone or in proper combination.

With respect to the rejection of Claims 8 and 16 as anticipated by Surampudi, Applicants respectfully traverse this ground of rejection. Claim 8 recites, *inter alia*, "a heat exchanger connected to the mixing container so as to exchange heat between ambient air and the liquid mixture." Claim 16 recites, *inter alia*, "a circulation unit circulating the liquid

mixture between the mixing container and the heat exchanger so as to exchange heat between the ambient air and the liquid mixture."

A common recitation of "to exchange heat between the ambient air and the liquid mixture" limits a form of connection of the heat exchanger to the mixing container. As is apparent from this recitation, at least one of the fluids subject to the heat exchange is the liquid mixture formed of the liquid fuel and the exhaust from the liquid fuel cell. Both Claims 8 and 16 define the "liquid mixture" as a mix of the liquid fuel and the exhaust exhausted from the liquid fuel cell.

In contrast, Surampudi does not disclose or suggest "a heat exchanger connected to the mixing container so as to exchange heat between ambient air and the liquid mixture." As already discussed above, Surampudi does not describe or suggest what heat exchanger 37 exchanges heat between. The heat exchanger directly receives the output from the anode outlet port 23 of the stack 25, and may use it as one of the working fluids. As is apparent from Fig. 2 of Surampudi, no element to mix the output from port 23 with the liquid fuel to form a liquid mixture intervenes between heat exchanger 37 and port 23. Therefore, even if another working fluid were ambient air, the heat exchanger 37 in Surampudi must not exchange heat between ambient air and the liquid mixture.

Thus, Surampudi does not disclose or suggest the above-noted elements of Claims 8 and 16.

Furthermore, Von Andrian and Tskuki do not cure the above-noted deficiencies in Surampudi.

In view of the above-noted distinctions, Applicants respectfully submit that Claims 8 and 16 (and any claims dependent thereon) patentably distinguishes over Surampudi, Von Andrian, and Tskuki, taken alone or in proper combination.

Should the above distinctions be found unpersuasive, Applicants respectfully request that the Examiner provide an explanation via Advisory Action pursuant to MPEP § 714.13 specifically rebutting the points raised herein for purposes of facilitating the appeal process.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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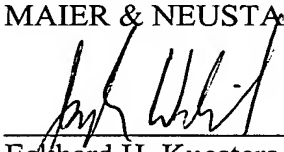

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